

U.S. Serial No. 10/711,984

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Dkt. No. 81107532 (FGT 1947 PA)

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AMENDMENTS TO THE CLAIMS

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In the set of claims within the Application, please cancel original claims 1-20 and add new claims 21-40 as hereinafter indicated.

1-20. (Cancelled)

21. (New) A smart airbag for being deployed and monitored by a restraint control module onboard a vehicle, said smart airbag comprising:

an inflatable bag having a monitorable deployment characteristic;

a triggerable inflator for deploying said bag;

a trigger device adapted for being coupled to said restraint control module and said inflator, said trigger device having a predetermined circuit characteristic associated therewith;

a trigger substitute adapted for being coupled to said restraint control module, said trigger substitute having a predetermined circuit characteristic associated therewith that is detectably different than said predetermined circuit characteristic associated with said trigger device;

an airbag-state sensor for sensing said deployment characteristic of said bag and generating an airbag-state signal in response thereto; and

an airbag-state monitor coupled to said airbag-state sensor and adapted for selectively coupling a trigger to said restraint control module according to said airbag-state signal, said trigger being selected from the group consisting of said trigger device and said trigger substitute;

whereby said restraint control module is able to initiate deployment of said bag and also monitor said deployment of said bag by detecting said predetermined circuit characteristic of said trigger as selectively coupled to said restraint control module by said airbag-state monitor.

22. (New) A smart airbag according to claim 21, wherein said deployment characteristic of said bag is internal pressure, and said airbag-state sensor includes an internal-pressure sensor by which said internal pressure of said bag is able to be monitored.

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23. (New) A smart airbag according to claim 21, wherein said deployment characteristic of said bag is degree of expansion, and said airbag-state sensor includes both a tether attached to said bag and a barcode-type reader for determining the payout of said tether by which said degree of expansion of said bag is able to be monitored.

24. (New) A smart airbag according to claim 21, wherein said smart airbag further comprises:

an additional inflator for deploying said bag; and

an additional trigger device adapted for being coupled to said restraint control module and said additional inflator.

25. (New) A smart airbag according to claim 21, wherein said trigger device is an igniter.

26. (New) A smart airbag according to claim 21, wherein said trigger substitute is also adapted for being coupled to said inflator.

27. (New) A smart airbag according to claim 21, wherein said trigger device and said trigger substitute are selectively coupled in parallel with each other.

28. (New) A smart airbag according to claim 21, wherein said trigger device and said trigger substitute each include at least one resistor, and said predetermined circuit characteristic associated with both said trigger device and said trigger substitute is resistance.

29. (New) A smart airbag according to claim 28, wherein said predetermined circuit characteristic of said trigger device has a resistance value of approximately 2 ohms, and said predetermined circuit characteristic of said trigger substitute has a resistance value that is detectably different than said resistance value of said trigger device.

30. (New) A smart airbag according to claim 21, wherein said predetermined circuit characteristic associated with said trigger device serves to indicate that a fault has not occurred during said deployment of said bag when detected by said restraint control module, and said

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predetermined circuit characteristic associated with said trigger substitute serves to indicate that a fault has occurred during said deployment of said bag when detected by said restraint control module.

31. (New) A smart airbag according to claim 21, wherein said smart airbag includes a switch adapted for coupling said restraint control module to one of said trigger device and said trigger substitute as selectively controlled by said airbag-state module according to said airbag-state signal.

32. (New) A smart airbag according to claim 21, wherein said airbag-state monitor is also coupled to said inflator for selectively controlling said inflator according to said airbag-state signal.

33. (New) A smart airbag according to claim 21, wherein said airbag-state monitor is also coupled to said trigger device for selectively controlling said trigger device according to said airbag-state signal.

34. (New) A smart airbag according to claim 21, wherein said smart airbag further comprises an air bypass coupled to said bag and adapted for regulating the amount of air within said bag as selectively controlled by at least one of said restraint control module and said airbag-state monitor according to said airbag-state signal.

35. (New) A smart airbag for being deployed and monitored by a restraint control module onboard a vehicle, said smart airbag comprising:

an inflatable bag having at least one monitorable deployment characteristic;

a plurality of triggerable inflators for deploying said bag;

a matching plurality of trigger devices adapted for being coupled to said restraint control module and said inflators respectively, at least one of said trigger devices having a predetermined circuit characteristic associated therewith;

at least one trigger substitute adapted for being coupled to said restraint control module, each said trigger substitute having a predetermined circuit characteristic associated therewith

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that is detectably different than each said predetermined circuit characteristic associated with any of said trigger devices;

at least one airbag-state sensor for respectively sensing each said deployment characteristic of said bag and respectively generating at least one airbag-state signal in response thereto; and

an airbag-state monitor coupled to each said airbag-state sensor and adapted for selectively coupling at least one trigger to said restraint control module according to each said airbag-state signal, each said trigger being selected from the group consisting of each of said trigger devices having a predetermined circuit characteristic associated therewith and each said trigger substitute having a predetermined circuit characteristic associated therewith;

whereby said restraint control module is able to initiate deployment of said bag and also monitor said deployment of said bag by detecting each said predetermined circuit characteristic of each said trigger as selectively coupled to said restraint control module by said airbag-state monitor.

36. (New) A smart airbag according to claim 35, wherein at least one said monitorable deployment characteristic of said bag is selected from the group consisting of internal pressure and degree of expansion.

37. (New) A smart airbag according to claim 35, wherein each of said trigger devices having a predetermined circuit characteristic associated therewith and each said trigger substitute having a predetermined circuit characteristic associated therewith includes at least one resistor, and each said predetermined circuit characteristic associated with any of said trigger devices and each said predetermined circuit characteristic associated with each said trigger substitute is resistance.

38. (New) A smart airbag according to claim 35, wherein said smart airbag further comprises an air bypass coupled to said bag and adapted for regulating the amount of air within said bag as selectively controlled by at least one of said restraint control module and said airbag-state monitor according to each said airbag-state signal.

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39. (New) A method for deploying and monitoring a smart airbag with a restraint control module onboard a vehicle, said method comprising the steps of:

operating a trigger device in response to said restraint control module to initiate deployment of an inflatable bag with a triggerable inflator;

operating an airbag-state sensor to sense a monitorable deployment characteristic of said bag and accordingly generate an airbag-state signal;

operating an airbag-state monitor in response to said airbag-state signal to determine whether a fault has occurred during said deployment of said bag;

operating said airbag-state monitor to selectively couple said trigger device to said restraint control module when no fault is determined to have occurred, said trigger device having a predetermined circuit characteristic associated therewith that is detectable by said restraint control module; and

operating said airbag-state monitor to selectively couple a trigger substitute to said restraint control module when a fault is determined to have occurred, said trigger substitute having a predetermined circuit characteristic associated therewith that is detectable by said restraint control module and also detectably different than said predetermined circuit characteristic associated with said trigger device.

40. (New) A method according to claim 39, wherein said method further comprises the step of:

operating an air bypass to regulate the amount of air within said bag as selectively controlled by at least one of said restraint control module and said airbag-state monitor according to said airbag-state signal.